

Claims

1. Apparatus comprising a telecentric optical system for transmitting an image to a digital image plane, said telecentric optical system comprising
 - (a) telecentric optics which are telecentric in image space,
 - (b) at least one planar surface that produces ghost images, said planar surface located in image space after said telecentric optics,
 - (c) said telecentric optical system configured to determine a characteristic function for the ghost images produced by the planar surface, and to provide correction for the ghost images based on the characteristic function.
2. Apparatus comprising a telecentric optical system for transmitting an image to a digital image plane, said telecentric optical system comprising
 - (a) telecentric optics which are telecentric in object space,
 - (b) at least one planar surface that produces ghost images, said planar surface located in object space before said telecentric optics,
 - (c) said telecentric optical system configured to determine a characteristic function for the ghost images produced by the planar surface, and to provide correction for the ghost images based on the characteristic function.
3. Apparatus comprising a telecentric optical system for transmitting an image to a digital image plane, said telecentric optical system comprising
 - (a) telecentric optics which have double or duel telecentricity,
 - (b) at least one planar surface that produces ghost images, either one of said planar surfaces located in image space after said telecentric optics and/or the other planar surface located in object space before said telecentric optics,
 - (c) said telecentric optical system configured to determine a characteristic function for the ghost images produced by the planar surface, and to

10 provide correction for the ghost images based on the characteristic
11 function.

1 4. A method for providing ghost image correction in a telecentric optical system for
2 transmitting an image to a digital image plane, where the telecentric optical system
3 comprises telecentric optics which are telecentric in image space, and at least one
4 planar surface produces ghost images is located in image space after the telecentric
5 optics, the method comprising the steps of

6 (a) determining a characteristic function for the ghost images produced by the
7 planar surface, and
8 (b) providing correction for the ghost images, based upon the characteristic
9 function for the ghost images.

1 5. A method for providing ghost image correction in a telecentric optical system for
2 transmitting an image to a digital image plane, where the telecentric optical system
3 comprises telecentric optics which are telecentric in object space, and at least one
4 planar surface produces ghost images is located in object space before the
5 telecentric optics, the method comprising the steps of

6 (a) determining a characteristic function for the ghost images produced by the
7 planar surface, and
8 (b) providing correction for the ghost images, based upon the characteristic
9 function for the ghost images.

1 6. A method for providing ghost image correction in a telecentric optical system for
2 transmitting an image to a digital image plane, where the telecentric optical system
3 comprises telecentric optics which are which have dual telecentricity, and wherein
4 at least one planar surface that produces ghost images is located in image space
5 after the telecentric optics and or another planar surface that produces ghost
6 images is located in object space before the telecentric optics, the method
7 comprising the steps of

8 (a) determining a characteristic function for the ghost images produced by the
9 planar surface, and

10 (b) providing correction for the ghost images, based on the characteristic
11 function for the ghost images.

1 7. Apparatus as set forth in claim 1, wherein a plurality of planar surfaces are located
2 in image space after the telecentric optics, at least one of which produces ghost
3 images, said telecentric optical system configured to determine a characteristic
4 function for the ghost images produced by the plurality of planar surfaces, and the
5 correction is based on the characteristic function for providing correction for the
6 ghost images.

1 8. Apparatus as set forth in claim 1, wherein said predetermined characteristic
2 comprises a weighting function that has been predetermined for the telecentric
3 optical system.

1 9. Apparatus as set forth in claim 1, wherein said telecentric optical system produces
2 image data corresponding to image data from an object, said correction is
3 configured to sample portions of the image data to produce weighted samples
4 corresponding to the predetermined weighting function, sum the weighted samples
5 to create an approximation to a weighted integral, and then repeat the foregoing
6 steps to compute weighted integrals for each of the image elements, and thereby to
7 correct the image data.